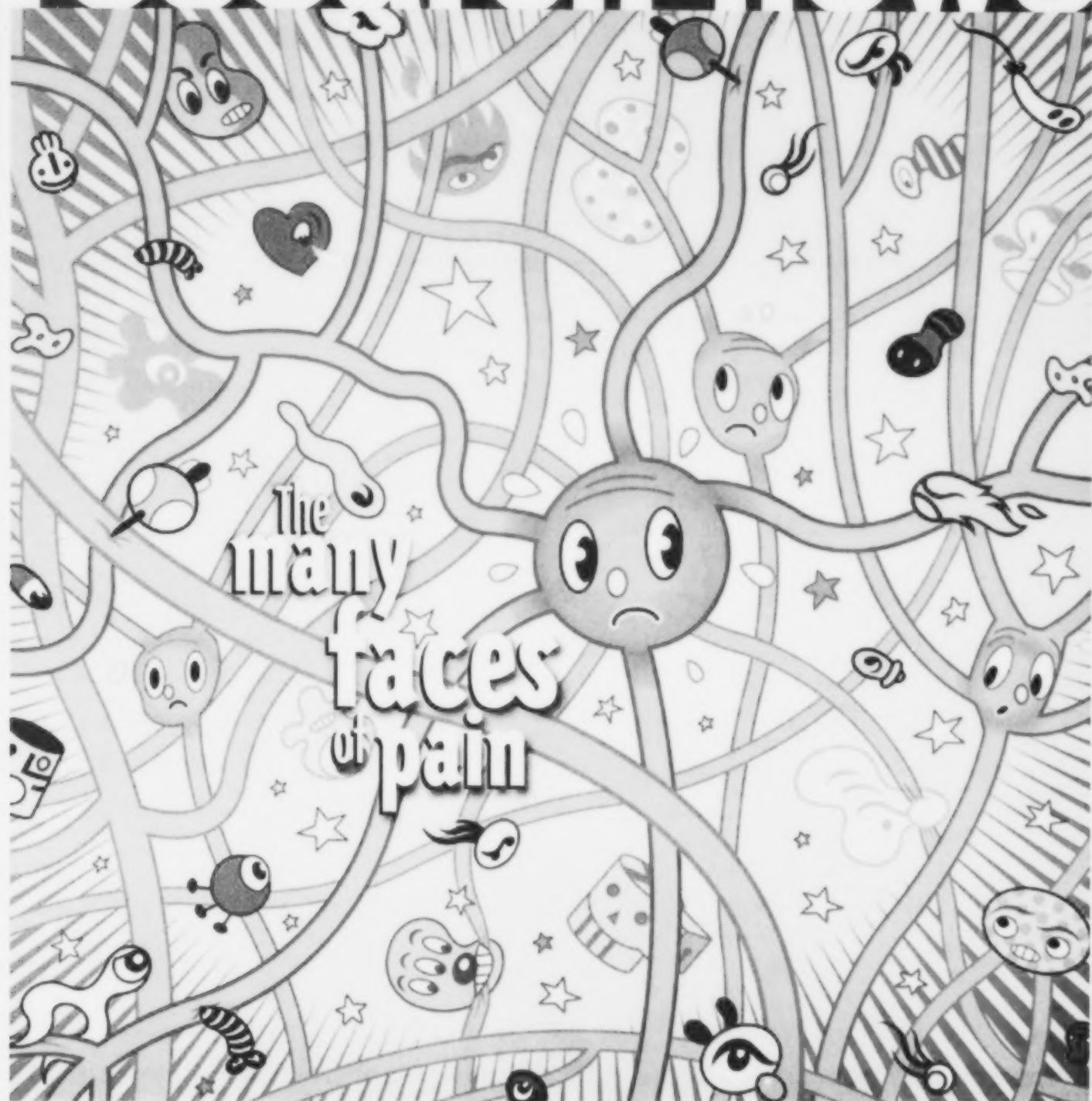
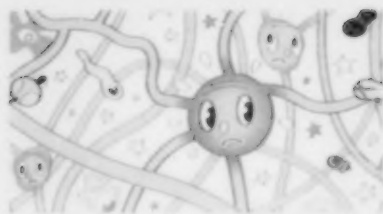


WINTER 2005

research news



On the Cover



Dwight Allott graduated from the Alberta College of Art and Design. To represent pain, he envisioned a nervous system in a colourful chaos. His versatile work has been used by Harry Rosen, Burger King, The Wall Street Journal, and Cottage Life.

AHFMR supports a community of researchers who generate knowledge whose application improves the health and quality of life of Albertans and people throughout the world. AHFMR's long-term commitment is to fund health research based on international standards of excellence and carried out by new and established investigators and researchers in training.

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research news

ALBERTA HERITAGE FOUNDATION FOR MEDICAL RESEARCH

WINTER 2005

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When former NASA astronaut Dr. James Bagian speaks about safety, it's much more than a theoretical discussion.

The veteran of two shuttle flights and an investigator into both the *Challenger* and *Columbia* shuttle disasters, Dr. Bagian has had some real-life experience with safety systems and procedures. "When I flew the shuttle, there was a 4% chance of being killed," he states matter-of-factly. "Did that make me nervous? Sure. But it was managed risk, studied risk. It wasn't like rolling the dice. I don't take risks lightly." This is the attitude this physician and engineer now brings to his role as director of the United States Veterans Affairs (VA) National Center for Patient Safety (NCPS).

However, don't make the mistake of linking patient safety and medical error in a discussion with Dr. Bagian. "Error is an oversimplification that really limits our ability to deal with the problem effectively," he says. "Our goal is harm prevention, not error prevention. Focusing

on error makes it personal; finding out who was at fault is revenge. But most importantly, it doesn't keep these things from happening."

Neither does mandatory reporting of medical errors. "Not all errors are ever going to be reported, and statistics don't help people get better," he emphasizes. "To say we should run some randomized, controlled trial to determine how many hip fractures occur due to patients falling out of bed is wrong-headed. How many are enough before we act?"

Instead, Dr. Bagian recommends looking to industries that have good safety records, such as commercial aviation and nuclear power. Both industries operate in highly hazardous environments. Airlines in the United States see about 3.5 million take-offs and landings annually, but major accidents rarely occur.

Meanwhile, there has never been a significant radiation leak from any nuclear power accident in the western world—even the incident at Three Mile Island did not translate into significant human health problems. "Statistically, incidents in these two industries are almost random occurrences," says Dr. Bagian. "Yet, in the medical world, 4% to 13% of all patients who enter hospital are injured just by being in a hospital."

Dr. Bagian attributes some of this variation to a difference in workplace cultures. He points out that in medicine, nurses or medical students may not always feel comfortable expressing an idea or concern. Not so in aviation, where anyone who feels something is unsafe is encouraged to speak up. "Anybody can have a good idea," stresses Dr. Bagian. "But we need to get the hierarchy out of medicine."

Another idea not often found in the medical world is the concept of "fault tolerance": the understanding that errors will occur. For example, if a plane engine fails, the plane will usually not crash, because backup safety systems are in effect. But what

if a doctor misses something on an ECG? Dr.

Bagian points out that it is simply not realistic to expect people to be perfect every day. "If perfection is the only way we can make sure our patients aren't hurt, then we guarantee we have a system that will hurt people. Most businesses and professions are founded on the concepts of personal responsibility, diligence, knowledge, etc.—and these are

"Our goal is harm prevention."


good things. But it is foolish for these concepts to be our sole barrier to tragedy. Pilots strive to be perfect too, but they know they might wind up dead if that's all they can rely on for their safety."

Instead, Dr. Bagian wants to design systems to reduce harm to patients based on an understanding of why something happened, not who did it. "We need to understand why systems fail," he says. "Was it that the ratio of patients to nurses was incorrect for the severity of the patients' illnesses? Was it that the way we communicated instructions, using certain abbreviations, was unclear? Was it that we used verbal communication for medical instructions when they should have been written down?"

The latter example shows how a simple change can make a difference. VA medical facilities now require medical instructions to be either transmitted in writing or repeated back to the physician if issued verbally. "Read-back doesn't cost any money and takes about five seconds," explains Dr. Bagian, adding that studies have shown recollection improves about 85% if something is repeated.

Another example of a VA patient-safety tool is a barcode for medication administration. Every patient at a VA hospital has a wristband with a barcode. Every medication also has a barcode. Nurses scan the wristband when administering medication and the patient's

records come up on the computer. The nurse then scans the medication to ensure it is correct. With this system, the chance of the patient getting the wrong medication becomes almost zero.

VA hospitals also analyze close calls. "When something serious happens, it's usually not the first time they got close," says Dr. Bagian. "At VA we look at close calls with the same attention as if somebody had died. We look at actual harm, probability of harm, severity of harm. You don't have to hurt someone to decide how to do something better. That's the difference between a culture that is safety-oriented and one that's not." 

"We need to understand why systems fail."



AHFMR frequently receives letters requesting information about Heritage research or about specific medical conditions. "Responding to the Reader" is a new

AHFMR Research News feature intended to provide up-to-date information related to a reader's question, with the help of experts in the Alberta research community. AHFMR cannot provide medical advice, however; please see your family physician about your health concerns.

> Have you ever heard of aspartame poisoning?

This is the term coined to describe a list of illnesses or symptoms, including everything from brain tumours and seizures to headaches and blindness, all supposedly due to ingestion of the artificial sweetener, aspartame. Allegations about the dire effects of aspartame have flooded the Internet and clogged e-mail inboxes for years, and AHFMR recently received a letter asking if the claims were true. Dr. Catherine Field, an expert in nutrition and metabolism at the University of Alberta, has just completed a review of artificial sweeteners for the Canadian Diabetes Association and was able to shed some light on the subject.



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Evaluating information on the internet

While most books and journal articles making scientific claims must undergo a peer-review process prior to publication, the Internet has no such supervision—anyone can publish almost anything on the web. It is important, therefore, to critically evaluate all information found on the Internet.

To help in your evaluation, University of Alberta Libraries provides an online checklist of details to consider, beginning with the credentials of the author/organization that produced the site; whether the author/organization is well regarded in the field covered by the resource; whether there is an obvious bias; and even whether there are grammar, punctuation, or spelling errors.

For a complete list of suggested evaluation criteria go to
<http://www.library.ualberta.ca/guides/criticalevaluation/index.cfm>

"There are no scientific studies that indicate a safety issue with aspartame," Dr. Field states emphatically. While one study suggested that an increase in brain tumours was associated with an increased intake of aspartame, Dr. Field explains that the study showed only that both had increased, not that there was any cause-and-effect relationship. That study then triggered a number of new studies to look for a link. Several studies have since been published, but none of them have ever proven a causative relationship. For example, one piece of research looked at children with brain tumours and children without; it found no difference in their intake of aspartame. Similarly, no scientific evidence has ever shown that aspartame causes seizures, another complaint often attributed to the sweetener. "You could probably do a study showing


that most people with brain tumours have computers in their homes," says Dr. Field. "But that doesn't necessarily mean that one caused the other."

Dr. Field explains that aspartame is composed of two amino acids (aspartic acid and phenylalanine) that both occur naturally in foods, but not together. Putting the two together does not somehow convert them to a dangerous substance. "These amino acids are metabolized in aspartame no differently than they are in a steak," she says.

The only people who can't consume aspartame are those who cannot metabolize phenylalanine because of a rare genetic disorder called phenylketonuria. Since all products containing aspartame must include a warning that it contains this amino acid, those with the condition can easily avoid it.

Aspartame has been studied more intensively than any other food additive in history, according to the University of California, Berkeley, *Wellness Letter*. The U.S. Food and Drug Administration, Health Canada, the

American Medical Association, the World Health Organization, and many other organizations around the world have all confirmed that aspartame is safe. Yet the allegations continue to circulate.

Although the claims about aspartame's ill effects have never been substantiated, Dr. Field points out that if people still feel concerned about aspartame, they simply don't have to use it. "We do have a choice in the matter," she says. 

Dr. Catherine Field is a full professor in the Department of Agriculture, Food and Nutritional Science at the University of Alberta, and past chair of the National Nutrition Committee of the Canadian Diabetes Association. In addition to AHFMR equipment support, she also receives funding from the Canadian Institutes of Health Research, NSERC, and the Alberta Agriculture Research Institute.

Selected publication

Gougeon R, Spidel M, Lee K, Field CJ. Canadian Diabetes Association National Nutrition Committee technical review: non-nutritive intense sweeteners in diabetes management. *Canadian Journal of Diabetes* 2004 Dec;28(4):385-399.

Research on the **front lin** of health care

When we think of health research, most of us envision laboratories, test tubes, and work that may one day lead to a new pain medication or cancer therapy.

But Alberta is also known for research advances happening outside the lab, on the very front lines of healthcare delivery—work known as applied health research. This is the kind of research that looks at new ways of providing health care to make a difference in the treatment you receive at your local clinic, for example, or determining how to attract doctors and nurses to rural Alberta, or establishing how soon after birth mothers and infants can be safely discharged from hospital.

AHFMR created its applied health research programs to help realize the vision of a province where health innovation occurs from border to border, not only in academic institutions but throughout the

**"This merge
will allow
health regions
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broader range
of researchers."**

province's health regions. This same vision was also behind the recent merger of two of those flagship applied research programs—SEARCH (Swift Efficient Application of Research in Community Health) and ACHRN (Alberta Consultative Health Research

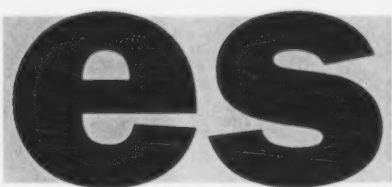
Network). SEARCH is an innovative program that since 1996 has trained people in health organizations to do and use health research, creating a network of professionals who can ask and answer questions about the most important health issues in their own communities. Since 1998, ACHRN has provided workshops and consultation services for Alberta health professionals interested in conducting research and evaluation. Both programs aim to improve and foster research capacity across the province. Now they will join together, with continued AHFMR support, as part of a new not-for-profit

organization which will increase that research capacity in Alberta and beyond.

As a former SEARCH "graduate" and current ACHRN liaison, Carol Connolly thinks the move is a good one. Carol is the regional research officer for the Aspen Regional Health Authority, the key contact within that region for health professionals who want to pursue research projects or find research evidence to inform their decisions, linking them with relevant people and resources. One of the first projects she assisted in her capacity as liaison was a food and nutrition survey conducted by the region's clinical nutritionist for Whispering Hills Primary School in Athabasca. The survey aimed to determine the challenges and barriers to providing adequate and nutritious foods within the school setting, as well as to develop healthy food policies for the school. Carol provided advice and feedback on the survey design and also obtained assistance and advice from Dr. Bonnie Dobbs, associate director of the University of Alberta Rehabilitation Research Centre. Dr. Dobbs is one of five research development advisors funded through applied health research programs.



RIGHT: CAROL CONNOLLY



Integration of the SEARCH and ACHRN programs will allow Carol to link health professionals in Aspen with additional experts from right across the province. "This merge will allow health regions to access a broader range of researchers for assistance on projects. We will have broader access to important sources of evidence and continued access to the expertise of the SEARCH faculty members," she says, referring to the team of experts from the academic and private sector who teach the SEARCH program and bring to the network such areas of expertise as organizational culture, health economics, program evaluation, and epidemiology. A SEARCH participant from 2001 to 2003, Carol knows the value of that expertise first-hand and would love to be able to help other healthcare professionals access the same know-how.

Carol also thinks the workshops and consultation services will benefit from being linked with the more identifiable SEARCH brand. She points out that SEARCH has become such a well-recognized program that it was part of the job posting for her current position with the region. "The ad stated that participating in the SEARCH program would be part of the orientation for the successful applicant for this position. That's good brand awareness!" 



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HEALTH RESEARCH NEWS

Healing SOLUTIONS

DURING HIS 15 YEARS as director of the burn unit at the University of Alberta Hospital, AHFMR Senior Scholar and plastic surgeon Dr. Edward Tredget has helped severely burned patients survive, heal, and walk out of the hospital—home to their families. *Page 6*

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Healing SOLUTIONS

Working from the bench to the bedside has allowed Dr. Tredget to tackle the most serious complications, from infection in the early stages of the burn to the painful scarring that can occur after healing.

Preventing infections

The biggest threat to burn patients often lies in the very place where they are being treated: the burn unit. *Pseudomonas aeruginosa* is a bacterium that can be found in almost any environment. It can contaminate surfaces, water, and, unfortunately, open wounds—and it is tough to eliminate. Most strains are highly resistant to antibiotics and can be very difficult to treat in the best of circumstances. For burn patients, who may already be struggling

just to survive, *Pseudomonas* is even more of a problem.

“Prevention is the name of the game.”

In 1989, when Dr. Tredget began working at the Firefighters’ Burn Treatment Unit,

he traced several *Pseudomonas* infections back to the burn unit’s hydrotherapy equipment, which was, ironically, used to clean burns. Removing the hydrotherapy units solved the problem of the contamination, but it created another difficulty: how to keep the burns clean. Knowing that *Pseudomonas* can be spread by the touch of a hand, Dr. Tredget collaborated with Dr. Robert Burrell, now chair of the Department of Biomedical Engineering at the university, and with the Fort Saskatchewan-based Westaim Corporation, to develop a product called Acticoat. Acticoat dressings release controlled



dosages of silver nitrate, a potent bactericidal agent, keeping the burn clean while eliminating the mess caused by repeated silver nitrate application. The overall result is a reduced risk of transmitting bacteria to the recovering burn patient.

“I didn’t go looking for the *Pseudomonas* research—it stepped on my toes,” says Dr. Tredget. “And as soon as I had one patient that got sick, I just didn’t want to have any more. Prevention is the name of the game.”

And prevention is hard work. Shortly after the hospital built a new burn unit in 2001, one infected patient contaminated the ward, and the infection spread to four others. After an intensive search, the team tracked the *Pseudomonas* to the sink. The problem was its design. The free-standing water sat just under the drain. When the taps were turned on, the water splashed and the organism dispersed in a mist, contaminating the area. Burn unit sinks now have ultraviolet tubes to kill the bacteria in the pipes, and 15 centimetres of air below the drain to prevent backsplash.

Dr. Tredget is confident that a clean burn unit plays a big role in successful outcomes for burn patients. “*Pseudomonas* infection has major consequences. We’ve done a study comparing burn patients infected with *Pseudomonas* to those who were not and we see huge differences in survival, length of stay in hospital, and the amount of antibiotics administered. Preventing the infection is the most important thing.”

ABOVE: DR. EDWARD TREDGET

Battling scars

While *Pseudomonas* infection can have many consequences for burn patients early in their treatment, the difficulties do not end there. After the burns have healed, many patients are left with painful red, raised marks known as hypertrophic scars. Dr. Tredget and his team want to understand how these scars form, in hopes of one day preventing the exaggerated healing process that causes them.

"The principal problem after the burn patient recovers is the scar itself. Our burn rehab clinic is full of patients with hypertrophic scarring, and we spend our days trying to manage it. It's a slow process and the treatments are long and difficult. You can't operate on it easily because it comes back readily."

Dr. Tredget's research focuses on white blood cells called fibrocytes that appear in greater numbers in burn wounds than in normal skin. Fibrocytes are produced by the bone marrow and recruited to the burn site. There they mature and produce agents that help the burn heal. In everyday injuries, agents such as collagen and transforming growth factor beta (TGF-beta) lead to the formation of scar tissue and healing. In severely burned patients these agents are overproduced, and a fibrous layer or hypertrophic scar occurs. Dr. Tredget and his team study a substance called interferon-alpha-2b (IFN-alpha-2b) as a potential treatment. This substance turns off TGF-beta and turns on collagenase, which helps break down the fibrous layer. Dr. Tredget and his team are very excited to see the possibilities.




Even more exciting, Dr. Tredget, in collaboration with University of Alberta surgery professor Dr. Aziz Ghahary, studies specialized skin cells known as keratinocytes. These cells appear to produce an agent more potent than IFN-alpha-2b for breaking down the fibrous layer in scar tissue. It may have a wide range of therapeutic benefits. "This has implications for the burn patient, but it can also have some rheumatologic effects and may be applicable to asthma patients since fibrosis does occur in the lungs of asthma patients."

Helping the Community

Dr. Tredget's work has been supported by AHFMR since 1988, and its impact on the Edmonton community has been quite staggering. Since he began working at the burn unit in 1989, severely burned patients have had a 600-fold increase in survival rates.

"Many other places wouldn't be able to treat some of the burn patients we have who walk home eventually. We have a good team of people in the burn unit and enough resources in the community that can allow us a chance to help people get better."

Born in Lacombe and raised in Barrhead, Alberta, Dr. Tredget says his path to a research and surgical career was shaped largely by his parents. "My father was the manager of TransAlta Utilities and my mother was the head nurse at the Barrhead hospital. So my father's sympathy for the working man and my mother's interest in caring for patients—that is what influenced me to become a physician and a researcher." 

AHFMR Senior Scholar Dr. Edward Tredget is the director of the Firefighters' Burn Treatment Unit and a professor in the Department of Surgery at the University of Alberta. His work is also supported by the Canadian Institutes of Health Research (CIHR), the Firefighters National Trust, the Canada Foundation for Innovation, and the International Association of Firefighters. Dr. Tredget was awarded the Harvey Allen Distinguished Service Award in 2004 by the American Burn Association for his research accomplishments.

Selected Publications

Tredget EE, Shankowsky HA, Rennie R, Burrell RE, Logsetty S. *Pseudomonas* infections in the thermally injured patient [review]. *Burns* 2004 Feb;30(1):3-26.

Ghahary A, Karimi-Busheri F, Marcoux Y, Li Y, Tredget EE, Taghi-Kilani R, Li L, Zheng J, Karami A, Keller BO, Weinfeld M. Keratinocyte-releasable stratifin functions as a potent collagenase-stimulating factor in fibroblasts. *Journal of Investigative Dermatology* 2004 May;122(5):1188-1197.

ARTWORK: PETER VON TIESENHAUSEN. FIREWALL #143. CARVED AND BURNED WOODEN BEE HIVE BOX LID. 20 X 16.5 IN. 2001. COURTESY OF THE ALBERTA FOUNDATION FOR THE ARTS.



The many faces of pain

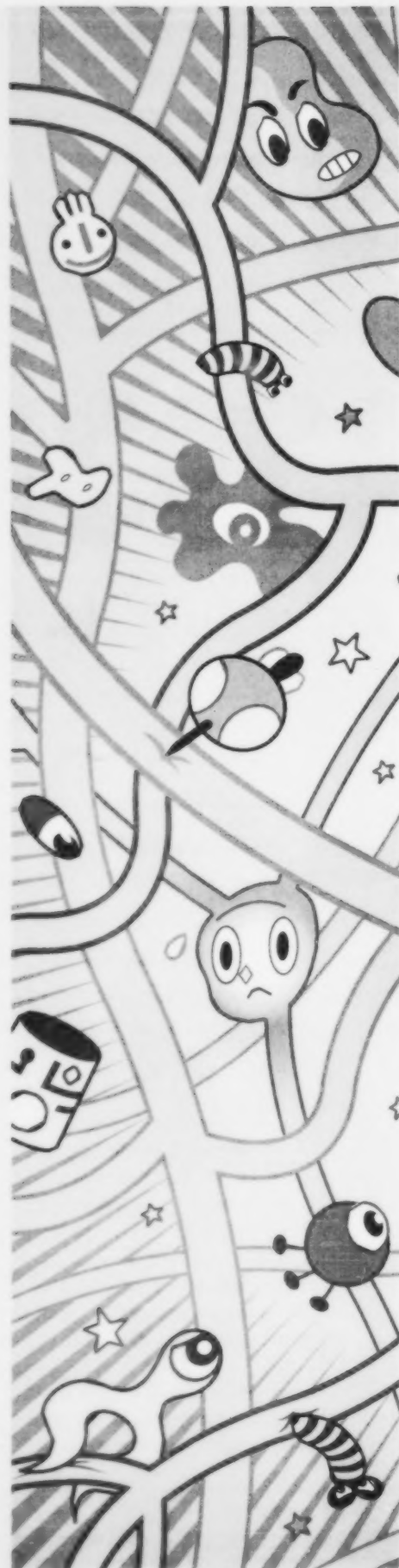
To Canadians, Michael Smith is known as one of our all-time best track-and-field athletes. To his doctors in Calgary, the three-time Olympian is also known for his right knee.

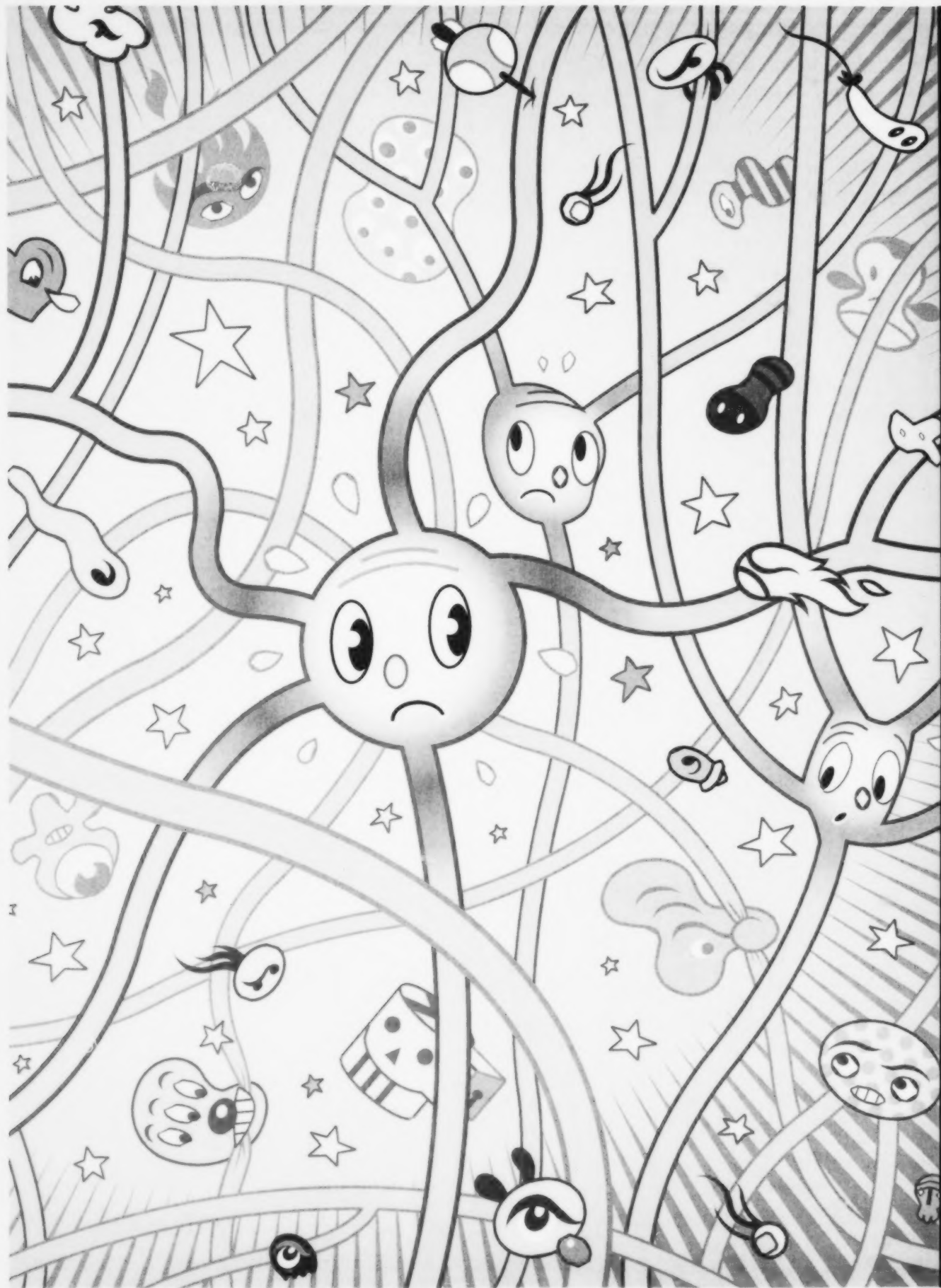
Competing in decathlon for more than 13 years had taken its toll on Smith's knee. But after two surgeries (cartilage removal and ligament repair) Smith is again an active athlete and promoter of amateur sports.



"Decathlon is very stressful on the joints, and my knee trouble was with me throughout my competitive career," says Smith. "Now I've got my knee function back. I'm doing yoga and a lot of sports I never used to have time for—skiing, snowboarding, windsurfing. I wouldn't be where I am today without the world-class care I received in Alberta. Specialists like my orthopaedic surgeon, Dr. Robert Bray, who does research as well as treating patients, make a big difference to a lot of people."

It's not only elite athletes who benefit from this leading-edge expertise. Dr. Bray, whose specialty is minimally invasive knee surgery, also sees weekend warriors and kids who fall off their bikes. "Knee prob-





Searching for the causes of back pain

Most of us either know someone who has suffered from back pain or have experienced it ourselves. Back pain takes a toll on our lives and our livelihoods. Between 30% and 40% of all workplace absences in Canada are due to back pain.

Breakdown of the discs between the bones in the spine is suspected to be the primary source of severe back pain. Around 85% of the population will show evidence of disc degeneration by the age of 50. But what causes disc degeneration? Is it bad posture? Heavy lifting? A sedentary lifestyle?

"It's embarrassing that we still don't know the answer to this question," says Heritage Scientist Dr. Tapio Videman at the University of Alberta. Dr. Videman, along with his colleague Dr. Michele Crites Battié, has been attempting to tease out the relative effects of genetic influences and environmental risk factors on back pain. Their work involves genetic research, clinical studies, and computerized image analysis, using a unique database of 300 fraternal twins and 300 identical twins in Finland. Twin studies allow researchers to filter out the effects of genetics and childhood experiences, and to focus on exposures in adulthood.


Dr. Videman's research has already produced some intriguing results. One finding is that excess physical loading explains only about 10% of disc degeneration, and aging accounts for another 10%; however, the most important factor, explaining about 50% of disc degeneration, is genetics. So far, six genes have been correlated with disc degeneration; more genes are expected to be identified.

The research team is now pulling together the various pieces of information: quantitative meas-



ures of disc degeneration from magnetic resonance imaging (MRI) of the twins' spines (100,000 images in all); detailed interviews about the childhood and adult experiences of the twins; and DNA data collected and analyzed by Finnish researcher Dr. Leena Peltonen.

"It's been a costly, ten-year journey since we began to pursue genetic influences," notes Dr.

Videman. "But we're now at a very exciting phase, when we can begin to study the interactions of genes and the environment with respect to MRI findings and back pain. I think that the outcome will be important." 

Dr. Tapio Videman is a Heritage Health Scientist and a full professor in the Faculty of Rehabilitation Medicine at the University of Alberta. His research has also been supported by the National Institutes of Health and the Academy of Finland.

Selected publication
Videman T, Battié MC, Gibbons LE, Maravilla K, Manninen H, Kaprio J. Associations between back pain history and lumbar MRI findings. *Spine* 2003 Mar 15;28(6):582-588.





**"Knee problems
can affect just
about anyone."**

lems can affect just about anyone," he says. "In fact, bone and joint problems are the number one quality-of-life issue for Canadians.

And the solution isn't just more surgeons: it's research that will lead to better therapies."

A case in point is Dr. Bray's own research at the University of Calgary. As a Heritage Senior Scholar, he has developed a new surgical instrument that takes measurements of blood flow during orthopaedic operations. His team's laser speckle imaging (LSI) technology has the advantage of speed: It takes blood-flow measurements in a mere 35 milliseconds, compared to conventional technology, which takes several minutes and is not set up to be used endoscopically. (An endoscope is a long, slender medical instrument used to examine the inside of the body and perform minimally invasive surgery.) Dr. Bray hopes the LSI will one day see routine use in operating rooms. In 2004, he submitted the first scientific paper reporting the results of using LSI endoscopically on five patients.

"Take the example of cartilage surgery in the knee," he explains. "The objective is to repair or remove the damaged cartilage, while preserving as much of the healthy cartilage as possible. But it's not always easy to see what is damaged and what is not. As a result, the failure rate for meniscus repair (the meniscus being the crescent-shaped cartilage in the knee joint) is about 30%. Our new device allows us to quickly and easily check on the condition of the cartilage during surgery. We have an opportunity to improve outcomes."

Dr. Bray notes that the device is not limited to knee surgery. It could be used during the Birmingham procedure, a relatively new alternative to hip replacement. The procedure involves resurfacing the head of the leg bone that fits into the hip socket. To perform the resurfacing, the hip must be dislocated from the socket by making



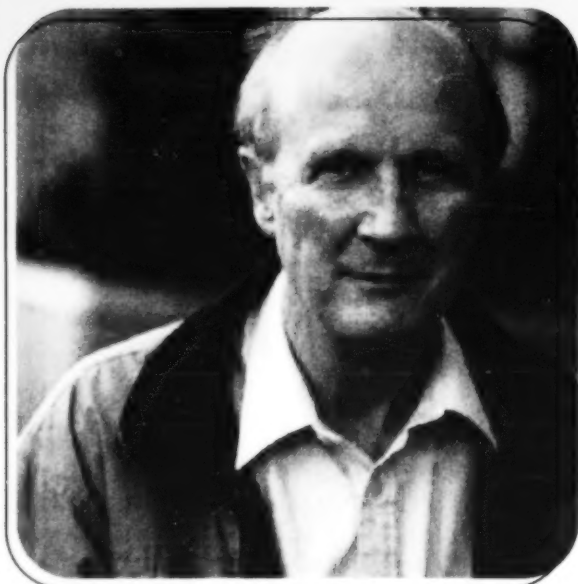
an incision in the joint capsule (the thin cartilage layer that envelops the joint). However, this could disrupt blood flow to the head of the leg bone. If that happens, the entire joint will eventually fail. "We think that LSI is the perfect tool to measure blood flow during this operation," says Dr. Bray. Clinical research to test LSI in a variety of orthopaedic operations is now under way in Calgary.

A robot knee

Improving patient outcomes is also the research focus of one of Dr. Bray's colleagues, former Heritage Scientist and orthopaedic surgeon Dr. Cy Frank. His research is driven by questions that come from surgical results. For example, Dr. Frank is a pioneer in the transplantation of damaged anterior cruciate ligaments (ACL), one of the two sets of ligaments that provide the knee with much of its stability. Transplanted ligaments sometimes stretch over time, resulting in a loose joint. "I want to understand why this happens, as well as other consequences of injury, such as the development of osteoarthritis," says Dr. Frank.

The answers are set to come from a unique source—a robot knee simulator, the first of its kind in the world. To develop and build this robot, Dr. Frank teamed up with University of Calgary engineering professors Dr. Nigel Shrive and Dr. Janet Ronsky. Their robot, called a ROTOPD, can simulate human joint motions, like a complete walk-

ABOVE: DR. CY FRANK



ing cycle. This allows the researchers to accurately measure forces in joint structures. "Right now this cannot be done in a living joint, so the robot is our best alternative," explains Dr. Shrive. "And our robot is simply the best—no other team in the world has come so far in reproducing real-life motions."

With the robot system fully functional, the team recently began a series of detailed studies. "We're able to ask more relevant questions about the mechanics of joints and how they are integrated into a biological system," says Dr. Shrive. "We will study the performance of soft tissues and soft-tissue transplants in normal and reconstructed joints. We will also be looking at why injured joints often develop osteoarthritis. I believe we're on the cusp of some exciting discoveries."

Arthritis pain

Of course, not all types of arthritis are caused by injury, but they do share a common symptom: pain. Pain is the prime complaint of arthritis sufferers, who number approximately 300,000 in Canada. University of Calgary

physiology professor and Heritage Scholar Dr. Jason McDougall studies the mechanisms of arthritis pain. Some recent discoveries in his lab hold promise for more effective pain control.

In 2004, his team isolated a compound produced in knee joints that is similar to morphine. This "endomorphin" is ten times more potent than morphine and is highly selective for pain receptors, which means that it is less likely to cause side effects throughout the body. Further testing revealed that the compound reduced pain caused by acute inflammation and also had an anti-inflammatory effect. All was looking good until the team tested endomorphin in a chronic model of arthritis. It didn't work.

"It turns out that the endomorphin receptor disappears in the chronic model," says Dr. McDougall. "This was a great disappointment for us, but that's part of the ups and downs of science. On the upside, the results have prompted a hundred other questions, which we are now exploring."

Dr. McDougall now focuses on trying to understand why the receptor disappears and how to stop that from happening. He also studies another group of potential pain-control compounds called endocannabinoids. These marijuana-like substances produced by the body have only recently been discovered and represent a very new area of research.

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DR. JASON MCDUGALL



Pain is the prime complaint of arthritis sufferers.

ABOVE: DR. NIGEL SHRIVE

Back pain...don't take it lying down

That's a message Albertans may hear soon.

A research project involving a public-health campaign, set to start this spring, will address a very common health complaint—back pain. But while the complaint is familiar the campaign's key messages may be new to readers. In summary, the key messages are:

- 1. Back pain is typically not a serious medical problem. (Studies show that about 95% of back pain is simple, non-specific back pain, which means a specific medical condition like a broken bone cannot be identified. The cause is not known.)
- 2. Disability can be reduced and even prevented by positive attitudes.
- 3. People suffering from back pain should continue to stay active and perform their usual activities as much as possible, rather than resting for prolonged periods.¹

"This advice is based on solid research," notes Dr. Doug Gross, a rehabilitation medicine professor at the University of Alberta. "Back pain is common and treatment has a very limited impact on long-term outcomes largely because the natural history of the condition is so positive—it gets better on its own. Importantly, rest is not effective for back pain; it's counter-productive."

Public health campaigns targeting back pain were sponsored by workers' compensation and industry agencies in Australia and Scotland in the late 1990s. They were based on findings from research in a number of areas which showed that: changing beliefs and modifying behaviours can significantly reduce disability and work absence; existing back pain treatments have limited impact on long-term outcomes; and

treating simple, non-specific back pain as a medical problem may contribute to disability.

The results of the Australian and Scottish campaigns were impressive, including significant reductions in new workers' compensation back claims by more than 15%, and related healthcare costs by 20%. Notably, the impact was sustained at least three years after the campaign.

Will a similar campaign have the same impact in Alberta? That's what Dr. Gross aims to find out. His study will use pre- and post-campaign surveys and analysis of key data from the Workers' Compensation Board and Alberta Health and Wellness to evaluate the Alberta campaign.

"We have the leaders of the Australian and Scottish campaigns on our research committee," says Dr. Gross.

"They're eager to see how this plays out in Alberta. So are we."

1. Source: Working Backs Scotland campaign

Dr. Doug Gross is an assistant professor in the Faculty of Rehabilitation Medicine at the University of Alberta. His study "Can a public health education campaign change public perception about back pain and reduce work-related disability?" is supported by the Health Research Fund, which is administered by AHFMR on behalf of Alberta Health and Wellness. The back-pain education campaign is supported by the Alberta Workers' Compensation Board; Alberta Human Resources and Employment; the Alberta Construction Safety Association; the Manufacturers' Health and Safety Association; and the Alberta Hotel Safety Association.

Selected publication

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ABOVE: DR. DOUG GROSS

Better treatments for chronic pain

Given the devastating effect of chronic pain on the lives of sufferers and their families, finding better treatments for it is a priority for Alberta's regional health authorities, as well as for Alberta Health and Wellness.

But it's not always clear which treatments work best. For objective assessment of research done on pain therapies, organizations can call on AHFMR's Health Technology Assessment Unit. The HTA Unit evaluates the properties and effects of healthcare technology, and provides the research evidence for healthcare decisions.


"We've had a long-standing focus on chronic-pain interventions," says Christa Harstall, assistant director of Health Technology Assessment. "The HTA Unit has built up considerable expertise in this area."

Since 2002, the Unit has compiled reports on the safety and effectiveness of gabapentin, cannabis, and trigger-point injections for the treatment of chronic pain. A review of multidisciplinary pain programs and an overview of the prevalence of chronic pain

have also been completed. Projects on the effectiveness of COX-2 inhibitors (such as Celebrex and Bextra) and opioids for chronic pain are currently under way.

"We've had a long-standing focus on chronic-pain interventions."

The HTA Unit also identified a number of conservative treatments for chronic low-back pain, based on research evidence. This work has evolved into the Ambassador Program, a one-year pilot project that offers pain-management workshops in health regions across Alberta.

This innovative program, which began in April 2004, teaches family practitioners, pharmacists, rehabilitation practitioners, psychologists, and nurses about the latest research related to the treatment of chronic pain. If successful, the program could become a model for training healthcare providers in other areas of healthcare delivery. 

AHFMR's HTA Unit, the Calgary Health Region, the Capital Health Region, and Alberta Health and Wellness are partners in the Ambassador Program, which is funded by the Canadian Coordinating Office for Health Technology Assessment.



Dr. McDougall's team is the only scientific group looking at endocannabinoids from the standpoint of arthritis pain relief.

"I think there's a lot of potential in compounds that are produced by the body, such as endomorphin and the endocannabinoids," he says. "The synthetic drugs that we currently use for pain control tend to have a broad range of side effects. We may be able to get around this by trying to understand the role of these naturally occurring substances and take advantage of the body's own pain-relief system."

More arthritis research

Arthritis research is also a focus for Heritage Senior Scholar Dr. Walter Maksymowych, an Edmonton rheumatologist and a professor at the University of Alberta. He studies inflammatory joint diseases such as ankylosing spondylitis and rheumatoid arthritis. The limitations faced by people who suffer from arthritis affect their quality of life and their ability to remain in the work force. Arthritis costs the Canadian economy more than \$4 billion per year.

On the positive side, Dr. Maksymowych points out that the number of patients who develop serious inflammatory joint disease is decreasing.

"Research has made great strides.

Our ability to treat these diseases has improved substantially," he says.

However, the withdrawal from the market of the arthritis drug Vioxx because of safety concerns has put the spotlight on the process of monitor-





ing new drugs after approval. This is an area where Alberta has taken a leading role. "Alberta rheumatologists routinely monitor joint-disease drugs for effectiveness and safety," says Dr. Maksymowych. "We've been doing this for the past four years. We're ahead of any other Canadian jurisdiction, and the program of surveillance of new therapeutics is unique internationally."

Key to Alberta's success in this area is its network of rheumatic disease units in Edmonton and Calgary, and the associated programs, organization, and infrastructure. The network is also the basis for a new project called Alberta Improvements for Musculoskeletal Disorders (AIMS), a project of the Institute of Health Economics. Its goal is to evaluate musculoskeletal disorders and see what can be done to decrease the effects on patients. As part of this initiative, Dr. Maksymowych is investigating prescribing patterns and developing guidelines for non-steroidal anti-inflammatory drugs (NSAIDs) to help primary-care physicians prescribe these drugs most effectively. This is in addition to his research on the genetics of ankylosing spondylitis, clinical trials of new therapeutics, and studies on proteins in blood that identify people at higher risk for joint diseases.

"Although I maintain a diverse range of research, the common thread is a focus on patients," he says. "The dream of

every investigator is to develop something that has a worldwide impact on patients. That's a powerful motivation." **RM**

Dr. Robert Bray is a Heritage Senior Scholar and full professor in the Department of Surgery at the University of Calgary. His research is also supported by the Canadian Institutes of Health Research (CIHR), the Arthritis Society of Canada, the Whitaker Foundation, the Department of National Defence, and the Olympic Oval Foundation.

Dr. Cy Frank is a former Heritage Scientist and full professor in the Department of Surgery at the University of Calgary. He is the McCaig Professor in Joint Injury and Arthritis, scientific director of the CIHR Institute for Musculoskeletal Health and Arthritis, and vice-chair of the board of directors of the Alberta Bone and Joint Health Institute.

Dr. Nigel Shrive is a full professor in the Department of Civil Engineering at the University of Calgary and holds a Killam Memorial Research Chair. Research done by Drs. Frank and Shrive is also supported by the Arthritis Society of Canada, CIHR, and the Canadian Arthritis Network.

Dr. Jason McDougall is a Heritage Scholar and an assistant professor in the Department of Physiology and Biophysics at the University of Calgary. His research is also supported by the Arthritis Society of Canada and by CIHR.

Dr. Walter Maksymowych is a Heritage Senior Scholar, and a full professor in the Division of Rheumatology, part of the University of Alberta's Department of Medicine. His research is also supported by CIHR and the Canadian Arthritis Network.

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Alberta Bone and Joint Health Institute


In March 2004, Alberta launched a new approach to treatment and research of musculoskeletal problems such as arthritis and bone and spine diseases.

The Alberta Bone and Joint Health Institute is working with partners and stakeholders to create a province-wide network designed to be a catalyst for change in bone and joint health care. In April 2005, with key support of physicians, Alberta Health and Wellness, and three Alberta health regions (Capital, Calgary and David Thompson), the Institute will help evaluate a pilot project to test an innovative model for patient care.

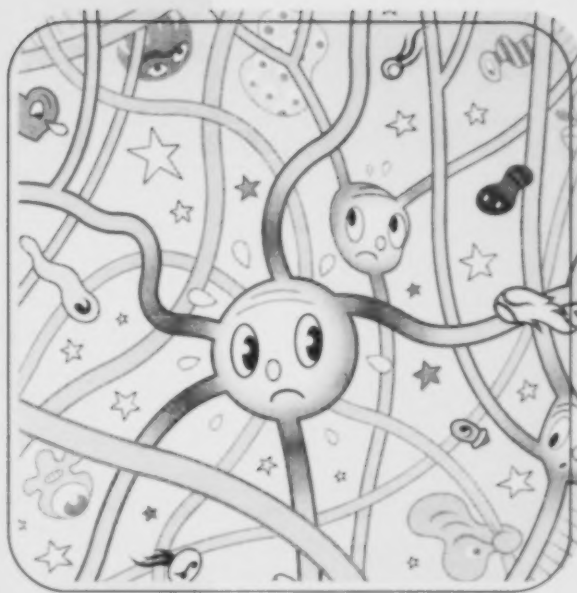
"We've known for a long time that there are problems with the delivery of bone and joint health care. Thousands of Albertans are waiting in line for more than six months to see some of the specialists who deal with bone and joint injuries and diseases," says former Heritage Scientist Dr. Cy Frank, who is the Calgary vice-chair of the Institute, along with Dr. Don Dick in Edmonton.

"One of the key issues is that the health system has become disconnected, with 'silos' of services—such as diagnostics, orthopaedic surgery, rheumatology, physiotherapy, and others—seemingly designed around that particular silo or service, rather than around the patient. Our goal is to work with the regions, our primary-care colleagues, and other providers in the province to help realign the system, so it better serves all of our patients and helps make our whole system more sustainable."

The new model will be tested at three new clinics in Calgary, Edmonton, and Red Deer. Family physicians participating in the study will select 1,200 patients to attend these clinics, where they will be assigned a case manager and a team of healthcare providers, including nurses, therapists, and physicians, that will facilitate appropriate access to care across various specialties. Waiting times to see an orthopaedic team and have surgery are expected to decrease dramatically. The Institute should have enough outcome data by the end of 2005 to assess the new model.

"I believe that Alberta is one of the few places where such an innovation could be tested," says Dr. Frank. "People here aren't afraid to try something new, and the spirit of inquiry is strong, fostered by research-intensive organizations like AHFMR." 

The Alberta Bone and Joint Health Institute is a partnership of the Alberta government; the Calgary, Capital, and David Thompson health regions; the University of Alberta; and the University of Calgary.



Continued from page 15

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- Miller D, Forrester K, Leonard C, Salo P, Bray RC. ACL deficiency impairs the vasoconstrictive efficacy of neuropeptide Y and phenylephrine in articular tissues: a laser speckle perfusion imaging study. *Journal of Applied Physiology* 2005 Jan;98(1):329-333.
- Frank CB, Shrive NG, Boorman RS, Lo IKY, Hart DA. New perspectives on bio-engineering of joint tissues: joint adaptation creates a moving target for engineering replacement tissues. *Annals of Biomedical Engineering - Special Issue: 2nd Special Edition on Musculoskeletal Bioengineering* 2004 Mar;32(3):458-465.
- Tapper JE, Ronsky JL, Powers MJ, Sutherland C, Majima T, Frank CB, Shrive NG. In vivo measurement of the dynamic 3-D kinematics of the ovine stifle joint. *Journal of Biomechanical Engineering* 2004 Apr;126(2):301-305.
- McDougall JJ, Kursat Barin A, McDougall CM. Loss of vasomotor responsiveness to the μ -opioid receptor ligand endomorphin-1 in adjuvant monoarthritic rat knee joints. *American Journal of Physiology - Regulatory, Integrative and Comparative Physiology* 2004 Apr;286(4):R634-R641.
- Barr SG, Martin L, Chung C, Maksymowych WP. Mandatory pharmacosurveillance - a Canadian model for access to therapy and research. *Clinical and Experimental Rheumatology* 2004;22(5 Suppl 35):S39-S43.

*To err is human; to forgive,
divine. Dr. David Cooke might
add: to learn from one's errors
is good management.*

Patient safety

In hospitals and other healthcare environments, patient safety is a management challenge, not a medical problem or a disease, says Dr. Cooke, the recipient of the Health Quality Council of Alberta Fellowship in Patient Safety. Born and raised in England, David Cooke came to Calgary in 1982 to work for NOVA Chemicals where he became director of safety and emergency planning in 1995. In 2004 he earned a doctorate from the University of Calgary's Haskayne School of Business. Now Dr. David Cooke hopes to be able to apply to the healthcare system some of the safety lessons he learned during his 27-year career in the chemical industry.

According to a recent study, 1 in 13 people—about 8%—suffers negative effects during a hospital stay; about 37% of these problems are preventable. Research by Dr. Cooke and others indicates that mistakes will occur in any complex socio-technical organization—whether it involves delivering health care, manufacturing chemicals, or flying aircraft. “These are normal accidents that are caused by problems with the

process or the system,” he says, citing a reported case of a nurse making an error in an unwieldy 75-step medical procedure.

Dr. Cooke says high-risk industries such as chemical manufacturing and aviation have learned that when errors occur, nothing is gained from punishing people who make mistakes. Instead, these industries have implemented effective management systems for learning from such incidents so they can be prevented in the future. He recalls the daily safety walkarounds he performed while in charge of safety at NOVA. “Let’s not fire a nurse who makes a mistake if the intention was good,” he says. “And let’s not cover the errors up. Let’s capture them and take care of them.”

Dr. Cooke works closely with Dr. Peter Dunscombe and Dr. Peter Craighead, directors, respectively, of the Medical Physics and Radiation Oncology divisions at the Tom Baker Cancer Centre in Calgary. Their goal is to implement an “incident-learning system” within the high-quality healthcare environments of the two departments. The project is part of a larger research program, led by Dr. Dunscombe and Robert C. Lee, Institute of Health Economics Fellow and assistant professor in the University of Calgary Department of Community Health Sciences. The program involves estimating and reducing risks to patients, and determining how resources are best spent in a quality-improvement program.

Dr. Cooke will design a system for effectively collecting information about actual and potential incidents involving patient safety, and for ensuring this information gets to healthcare managers who can change the way things are done. He and



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Patient safety

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AHFMR RESEARCH NEWS

the Tom Baker Cancer Centre team will also monitor the new system to see if a non-punitive, incident-learning approach significantly improves operational effectiveness and patient safety.

"Can we employ best practices from other industries and put in place a system, adapted to the healthcare environment, that will be effective and will radically improve the performance of the healthcare process?" Dr. Cooke asks. "The incident-learning system has to benefit the patient. That's the only performance result that matters." ■

Dr. David Cooke is a research fellow in the University of Calgary Department of Community Health Science, and a research associate and sessional instructor at the Haskayne School of Business. He holds the Health Quality Council of Alberta (HQCA) Fellowship in Patient Safety. The HQCA mandate is to improve the quality, safety, and performance of health services. AHFMR administers the new, one-year fellowship.

Selected publications

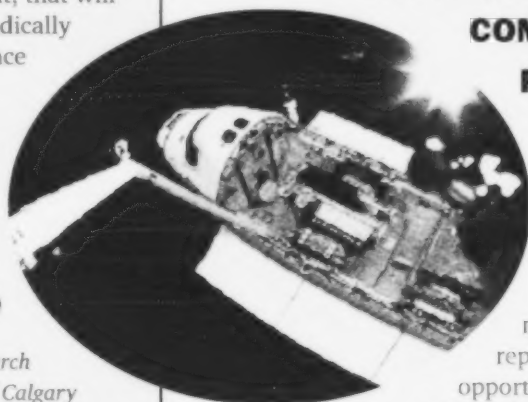
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PROJECT neuro

A CALGARY-BASED RESEARCH TEAM AIMS TO REVOLUTIONIZE NEUROSURGERY BY DEVELOPING THE WORLD'S FIRST IMAGE-GUIDED, MAGNETIC-RESONANCE-COMPATIBLE SURGICAL ROBOT.



The \$30-million Project neuroArm, a joint venture between the Calgary Health Region and the University of Calgary, promises less invasive and more accurate brain surgery. It also represents a new high-tech business opportunity for Alberta.

Although robotic surgery can sound a bit scary, it's important to realize that the robot is not operating on its own. Rather, it is being directed by a surgeon who uses special controllers that translate his hand movements into the movements of the robotic arms. Seated at a workstation, the surgeon watches a video of the brain taken through a surgical microscope, and can also view 3-D magnetic-resonance images of the patient's brain.

"The robot sees much more, and that provides the surgeon with greater precision," says Dr. Garnette Sutherland, a Calgary neurosurgeon and Project neuroArm leader. "With robotics, it is possible to see around corners and manipulate in ways that are now not possible."

Accuracy is another advantage. While neurosurgeons are trained to work at an accuracy level of about 1 millimetre, the robot is accurate to 30 microns—a micron is one-thousandth of a millimetre. This increased accuracy is particularly important today, as advances in nanotechnology and robotics will afford the ability to shift surgery from the organic to the cellular level.

Because there is so little room for error, the controllers used by the surgeon incorporate technology that is far beyond today's video-game controllers. The neuroArm controllers eliminate the natural tremor of the hand, and have safety switches that prevent accidental movements from being transmitted to the robot. The robot's

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Patient safety

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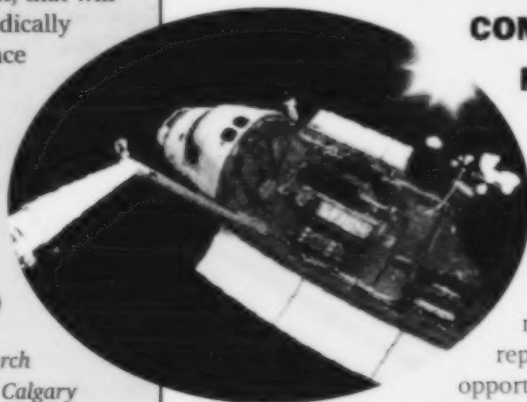
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Arm

"hands" are equipped with force sensors that transmit a sense of touch back to the surgeon through the hand controllers. As a result, the surgeon can actually "feel" what's going on in the operation.

Dr. Sutherland also expects Project neuroArm to revolutionize the way in which surgery is taught. Using neuroArm's image-guidance system, surgeons can practise virtual operations before the actual procedure. "Practice makes perfect: the saying applies to surgeons just as well as anyone," he adds.

Given the advantages, it's no surprise there's a buzz around Project neuroArm—in business circles, as well as in the scientific and medical world. The project has attracted substantial funding and a key industrial partner: MD Robotics. This company is best known as the developer of the Canadarm, Canada's contribution to the space shuttle program. MD Robotics is also the prime contractor for the sophisticated robotic system building and servicing the International Space Station.

Project neuroArm is now out of the lengthy design stage and rigorous testing stage, and into

manufacture. Delivery is expected within the next 20 months, after which neuroArm will be rapidly incorporated into surgery.


While the development of a functional surgical robot might be enough of a goal for a research project, the neuroArm team has its sights set on something bigger. "Our objective is to help not only neurosurgical patients here in Alberta but those throughout the world," says Dr. Sutherland. "To

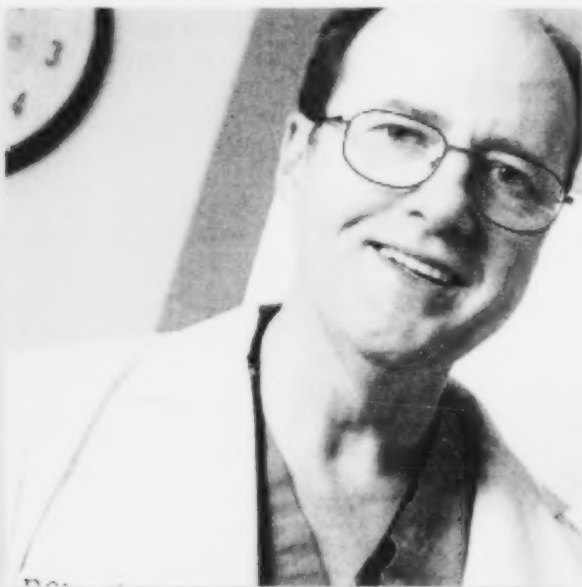
accomplish this, it is important to develop a company for the manufacture, marketing, and distribution of medical robotic systems."

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"The value of neuroArm isn't in the nuts and bolts; it is in the knowledge we have about surgical robotics," says Dr. Sutherland. "Protecting this knowledge is paramount. The AHFMR TC [Technology Commercialization] funding has played an important role in what we hope will be a commercial success." A key part of company development is protecting the intellectual property behind neuroArm. The funding which Dr. Sutherland received from AHFMR's TC program was used to offset the costs of patent protection.

Dr. Sutherland speaks from experience. Before Project neuroArm, he led the research team that invented an intraoperative MRI system—like neuroArm, a world first. The MRI system provides surgeons with exquisitely detailed three-dimensional images during an operation, so they can see if their surgery is proving successful. The system is manufactured and marketed by Winnipeg-based IMRIS Inc.

"We learned a lot of lessons from the commercialization of the intraoperative MRI system and we're applying them to Project neuroArm," says Dr. Sutherland. "People often talk about the difficulties involved in taking research results and translating them into changes at the bedside. Further translating this research to the marketplace may be even more difficult. As medical robotic technology is inevitable, we believe that Project neuroArm will be both successful, and a tribute to Canadian talent and dedication." 



DR. GARNETTE SUTHERLAND

Dr. Garnette Sutherland is a full professor of Neurosurgery at the University of Calgary. In addition to its AHFMR Technology Commercialization funding, Project neuroArm also receives support from the Canada Foundation for Innovation, Western Economic Diversification, the Alberta Science and Research Authority, the Seaman family, and a wide range of community donors.

Matthew Hicks

2004-2005 Lionel E. McLeod Scholarship Winner

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AHMR RESEARCH NEWS



The winner of the 2004-05 Lionel E. McLeod Health Research Scholarship, Matthew Hicks, has a very personal connection to his research on prenatal alcohol exposure.

Several years ago, a close friend adopted three children from the Northwest Territories—all of whom had some sort of deficit associated with fetal alcohol exposure. While his friend began dealing with the fallout in terms of the children's behavioural and developmental problems, Matthew began exploring subject areas for his graduate work. "I started to look at the literature around fetal alcohol spectrum disorder (FASD) and

realized there wasn't much there," he remembers. "It's considered one of the most common forms of birth defect in Canada, it's 100% preventable, yet we don't really know a lot about it." He decided to pursue the topic.


FASD is often diagnosed quite late, usually when a child starts school and behaviour and learning problems become more apparent. The earlier the diagnosis, the earlier the child can receive help, such



"It's one of the most common forms of birth defect in Canada"

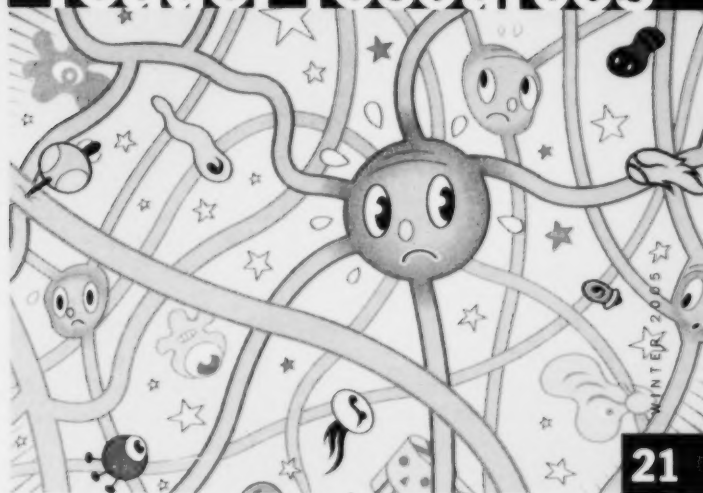
as improved access to resources and special education. "But in order to diagnose earlier, we need a better understanding of the potential for alcohol exposure prenatally," Matthew explains.

To help contribute to this understanding, Matthew works on three projects with a group of researchers. One project compares mothers' self-reporting of alcohol use during pregnancy with the level of fatty acid ethyl ester (FAEE)—a sign of drug or alcohol intake in the last trimester of pregnancy—in the infants' first stool. "Because of blame, guilt, and the stigma associated with drinking while pregnant, women may under-report," he points out. In the second project, a team assesses these same children at 24 months of age for behaviour, temperament, communication skills, and other developmental milestones, to determine if there is a correlation between extent of prenatal alcohol exposure and developmental outcomes. The goal is to identify children who might benefit from early intervention. The third project involves administering a survey to women after childbirth to determine their attitudes toward drug- and alcohol-testing of newborns. "We believe that if this kind of testing is ever to be done, it needs to be done with the mothers as partners, with their consent," Matthew explains.

Now in the second year of his medical studies in a combined M.D.-Ph.D program, Matthew plans to be a clinician-scientist in the pediatrics field. "I have a passion for this work, for mother-and-child health," says the father of two. "I really like the idea of working in an area where I can make a difference in a child's life." 

Matthew Hicks is an M.D.-Ph.D. student working under the supervision of neonatologist Dr. Reg Sauvé and AHFMR Population Health Investigator Dr. Suzanne Tough in the University of Calgary's Department of Community Health Sciences. In addition to the McLeod Scholarship, he also has an AHFMR Studentship. Funding for the above projects comes from Alberta Children's Services and the Health Research Fund, administered by AHFMR on behalf of Alberta Health and Wellness.

reader resources



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ANIMATED RESEARCH NEWS

Research views

Veterans Affairs National Center for Patient Safety (U.S.)

<http://www.patientsafety.gov>

Responding to the reader

Canadian Diabetes Association

<http://www.diabetes.ca>

University of Alberta Department of Agriculture, Food and Nutritional Science: Nutrition Quackery
http://www.afns.ualberta.ca/Hosted/Nutri100_Pre/Chapter1/reading_01/

University of Alberta Libraries: Critical Evaluation of Resources on the Internet
<http://www.library.ualberta.ca/guides/criticalevaluation/index.cfm>

Research on the front lines of healthcare

SEARCH program
<http://www.ahfmr.ab.ca/search.shtml>

Alberta Consultative Health Research Network (ACHRN)
<http://www.achrn.org/>

Healing solutions

Firefighters Burn Treatment Society
<http://www.firefighterbtu.net>

The many faces of pain

The McDougall Joint Inflammation and Pain Laboratory
<http://www.arthritis.ucalgary.ca>

University of Alberta Rheumatic Diseases Unit
<http://www.altarheum.com>

Back pain...don't take it lying down

Working Backs Scotland
<http://www.workingbackscotland.com/index.htm>

Better treatments for chronic pain

Chronic Non-Malignant Pain Website for the HTA Ambassador Workshops
<http://www.ahfmr.ab.ca/hta/ambassador>

Patient Safety

Quantitative approaches to patient safety: Research in risk analysis and risk management as applied to radiotherapy
<http://www.ahfmr.ab.ca/hta/hta-publications/initiatives/HTA-FR15.pdf>

Government announces \$500 million boost to AHFMR endowment

On January 11, 2005, marking the beginning of both the province's centenary year and AHFMR's 25th anniversary, the Government of Alberta announced a \$500 million boost to the Foundation's endowment. The money will be paid over three years, beginning in fiscal year 2005/06.

"We are delighted to learn of this decision and thank the provincial government for this strategic new long-term investment," says AHFMR president and CEO Dr. Kevin Keough. "Our reputation is based on funding excellent people of international calibre, and we look forward to strengthening our existing research programs to enhance Alberta's standing in the world of health research. We also look forward to undertaking new directions that resonate with Alberta's research community and our partners in order to advance the health and well-being of Albertans."

AHFMR funding has attracted many world-class scientists to Alberta over the years. People like Dr. Rob Sutherland, who studies the biological systems involving memory and learning in the fetal

brain that are permanently blunted by relatively low daily doses of alcohol. After spending 10 years at the University of New Mexico, Dr. Sutherland returned to Lethbridge in 2001. In addition to the prospect of AHFMR funding, another big draw for Dr. Sutherland was the University of Lethbridge's \$8-million behavioural neuroscience centre, towards which AHFMR contributed about \$1.4 million.

After 25 years, AHFMR has helped build a critical mass of research talent, an accomplishment that has monumentally changed the landscape for health research in Alberta. The addition of this \$500 million will help build a lasting legacy of innovation that will translate into improved health for Albertans and people around the world.

AHFMR 25th anniversary events

To mark AHFMR's 25th anniversary, the Foundation is planning a number of special events and initiatives around the province, including a series of lectures on health research topics. Lectures planned for February will address

the topic of heart research and include the following dates and locations:

- 1 **February 8, Medicine Hat**
Drama Centre, Crescent Heights High School
 - 1 **February 16, Grande Prairie**
2nd Street Theatre
 - 1 **February 23, Edmonton**
Corbett Hall, University of Alberta
- Lectures begin at 7:00 p.m.

For more information on these or other upcoming lectures, check AHFMR's website at http://www.ahfmr.ab.ca/25th_anniversary or call AHFMR Communications at (780) 423-5727. Check back frequently for the details of health research lectures coming to a community near you.

Dear Reader,

If you are not already on our mailing list for our quarterly AHFMR Research News, and would like to receive it, please phone, fax, e-mail or write us and ask to be added to our subscribers list. It's free!

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E-mail: ahfmrinfo@ahfmr.ab.ca

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Edmonton, Alberta T5J 4A7

RIGHT: DR. ROB SUTHERLAND

Physicians: please
place in your patient
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